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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,160	08/18/2003	Dmitry M. Rudkevich	124263-1016	3568

7590 09/27/2005

Thomas C. Wright  
Gardere Wynne Sewell LLP  
3000 Thanksgiving Tower, Suite 300  
1601 Elm Street  
Dallas, TX 75201-4767

EXAMINER

DRODGE, JOSEPH W

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/643,160

Applicant(s)

RUDKEVICH, DMITRY. M.

Examiner

Joseph W. Drodge

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Internet Publication of record as submitted by applicant by Zyryanov et al entitled "Sensing and Fixation of NO<sub>2</sub>/N<sub>2</sub>O<sub>4</sub> by Calix[4]Arenes".

Zyryanov et al disclose a calyx[4]arene compound that forms a complex with NO<sup>+</sup> cations, wherein the NO<sup>+</sup> may be any of various oxides of nitrogen and derived from a large variety of atmospheric substances, fossil fuels, power plants and large-scale industrial processes (Introduction of page 2997).

For claims 1-10, the reaction between the NO<sup>+</sup> cation and arene is detectable by color change (2<sup>nd</sup> paragraph of page 2998).

For claim 2, the color change is detectable by spectroscopy.

For claim 3, page 2998, 1<sup>st</sup> paragraph teaches disassociation.

For claim 4, the detected color change may be to a colorless condition (page 2998, 2<sup>nd</sup> paragraph, bottom of 4<sup>th</sup> paragraph).

For claim 5, both cone and 1, 3 alternate configuration of arene molecule are taught in paragraphs bridging pages 2997 and 2998.

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For claim 6, page 2997, 1<sup>st</sup> paragraph teaches "fixation" or immobilization of the complex.

For claim 7, the introduction teaches the NO<sup>+</sup> compounds in each of gaseous, liquid and liquid/gas mixture states of matter.

For claims 8 and 13 and also 16-18, the complex forms a molecular container, or storage device (page 2997, 2<sup>nd</sup> paragraph).

For claims 9 and 12 and also 18, use of substrates for cation transfer are introduced at page 3004, 1<sup>st</sup> paragraph.

For claim 10, stabilizing with Lewis Acids are taught at page 3000, 1<sup>st</sup> paragraph.

For claims 11 and 15, the forementioned fixation, necessarily concerns removal of the cations from air or liquid, hence purifying such air or liquid.

For claim 14, chemical stability persisting for weeks is taught at page 3000, top of the first column.

For claim 15, the introduction at page 2997 concerns simultaneous exposure of calixerenes to plural types of oxides of nitrogen in the air, hence to a mixture of oxides of nitrogen.

For claims 19 and 20, page 2003 teaches the calixerenes to be either optical sensors or enhance the potential for information storage and processing due to color changes/switches between two distinguishable states, hence use of calixerenes as optical switches.

Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. Applying of a new reference to

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encompass teaching of NO<sub>x</sub> compounds from other than nitric oxides was necessary in view of the Amendment.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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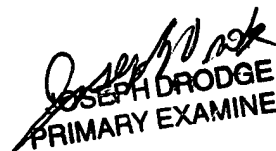
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

September 20, 2005

  
JOSEPH DRODGE  
PRIMARY EXAMINER